Totalizer module for ES transmitter **ES**

Operation manual for use of the totalizer module

This operation manual is a supplement to the manuals of BGN, BGF and TSK instruments.

Contents

1. Identification

1.1 Supplier / Manufacturer

Heinrichs Messtechnik GmbH
Robert-Perthel-Str. 9
D-50739 Köln

☎ +49 (221) 49708 - 0
🖷 +49 (221) 49708 - 178

Internet: http://www.heinrichs.eu
E-mail: info@heinrichs.eu

1.2 Product

Totalizer module for ES transmitter.

1.3 Version / File / Date

Version: 1.4
File: ES-ZM_BA_04_ENG.DOC
02.11.2016

2. Applications

The transmitter ES is used in flowmeters of the series BGN, BGF as well as the paddle meter TSK.
The totalizer module totalizes the flow rate and displays the number of counts. Further additional external pulse and status outputs as well as an external reset input are supplied.
Attention!
The combined use of an ES with a totalizer module is prohibited in hazardous areas !

3. Mode of operation and system design

3.1 Totalizer

The ES totalizes the measured flow and displays the accumulated value via the totalizer module.

3.2 System design

The totalizer board is plugged into a socket and mounted onto the transmitter ES below the scale plate.
The ES needs to be powered as described in chapter 7.1 of the standard operating manual (eg. by applying 24V DC)

4. Outputs and Input

4.1 Display

First line: 9-digit totalizer.
Second line: the totalizer unit.
Third line: relative flow

4.1.1 Totalizer

Actual counts are stored by the ES without any battery when switching off. After power on, the totalizer reading will be restored.

4.1.2 Alarm Display

If an alarm occurs (except for exceeding the limits), the text “ALARM” is displayed together with a number in the third line which represents the cause of the Alarm (bit coded, see chapter 7 for details).
If the ES detects that the floating body is jamming (if the corresponding self test is switched on) then the text “float ?” is displayed.

4.1.3 Backlight

The display can be illuminated with an external supply (24V DC, approx. 7mA).

4.2 Reset button

Resets the totalizer to zero. First, the cover has to be removed. The reset button can then be found in the upper left hand corner behind the scale plate (through a hole).

4.3 Digital outputs

Two digital passive outputs are available:

N1 as pulse output, N2 as alarm output.

4.4 Reset input

Applying an external 24 V DC to this input resets the totalizer.

4.5 LED

The red LED indicates that the alarm output N2 is opened.

5. Characteristic values

5.1 Digital outputs

NPN-transistor passive	nominal 24V DC
Maximum voltage	30V DC
Maximum current	20mA

5.2 Digital input, Backlight

Nominal	24V DC
Maximum input voltage	30V DC

5.3 Environmental conditions

5.3.1 Degree of protection (IP)

The transmitter ES must be installed in a housing that offers a degree of protection of at least IP20.

5.3.2 Ambient temperature limits

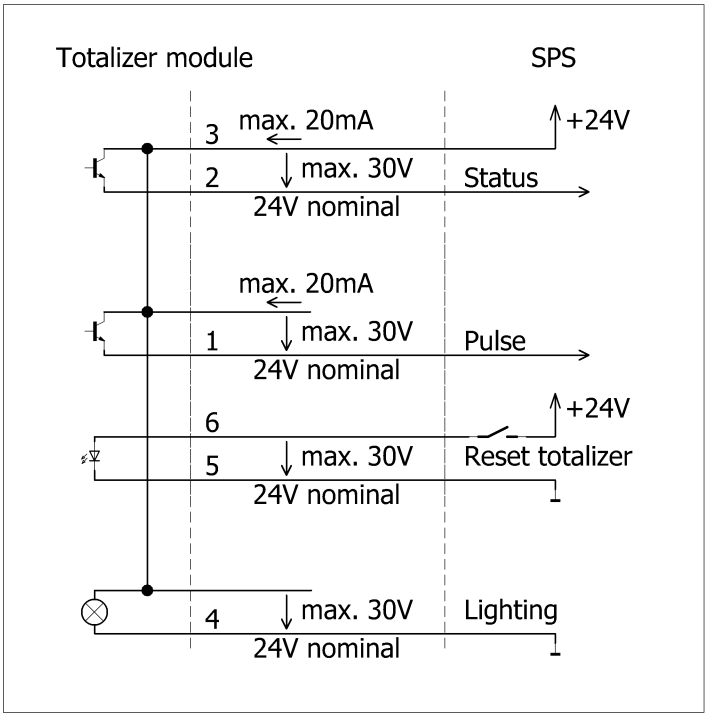
-10 °C to + 50 °C (14 °F to 122 °F). It must be ensured that the temperature in the display section does not exceed a value of +50°C (122 °F) due to environmental influences such as hot medium, sunlight or heating of the meter tube. If necessary, a display with an extended mounting bracket must be used at high fluid temperatures. Please also observe the tables of the section “Fluid temperature limit” of the device description for the fitting.

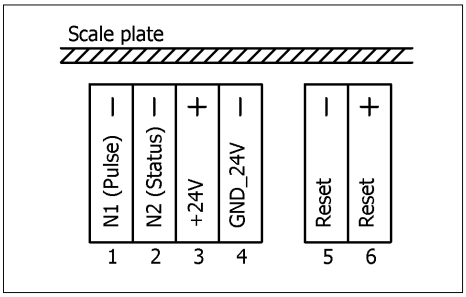
5.4 Storage temperature

-20 °C to + 50 °C (-4 °F to 122 °F)

6. Electrical Connections

6.1 Wiring diagram for pulse output, status output, reset input and display lighting





6.2 Installation procedure

- Remove cover
- Connect the wires
  The totalizer terminals can be found on the opposite side of the enclosure with reference to the transmitter ES terminals P**olarity must be observed!**
- Remount cover

7. Totalizer module configuration, HART®

The totalizer and the pulse output count the volume and mass units. (Refer to section 11.4 „Totalizer, pulse output“ of the ES operation manual.) The unit follows that of the flow rate (e.g. if the unit of the flow rate is l/h, then the totalizer counts liters, if m³/h is selected, m³ are totalized.)
If the pulse rate becomes too low (e.g. measured flow rate is 5m³/h and m³ are totalized, only 5 readings per hour will be updated in the displayed), it is recommended to increase the pulse rate by changing the flow unit (in the example to l/h) via HART® communication.
Here it must be noted that the maximum pulse rate is approx. 10 Hz. If this frequency is exceeded, then the pulse output cannot follow the totalizer, and consequently pulses will be accumulated and delayed released.

The totalizer can be switched on and off via **“Totalizer on/off” parameter**. The totalizer count is stored in the EEPROM when the device is switched off.
The totalizer can be reset via a HART® command.

The status output can be used as described in section 11.5 „Binary outputs N1 und N2“ of the ES operation manual.

The binary outputs can be assigned the following functions:
“NAMUR switch function” parameter

N1	N2
MAX	MIN
Pulse output	MIN
Pulse output	MAX
Pulse output	ALARM

The **“MAX” parameter** is the upper limiting value for the relative flow rate and the **“MIN” parameter** is the lower limiting value. Exceeding/dropping below MAX/MIN can also be output as an alarm at the current output (see the description of the self-test). The “Active state” parameter: The active state of N1 and N2 can be selected between “closed” and “opened” (applies to N1 as a MAX output).

As alarm the following setting can be made: **“Activated self-tests” parameter :** (Refer to section 11.7 of the ES operation manual)

	bit code in display
• Relative flow rate > 103 %	(00000004) only if another alarm
• Relative flow rate outside sensor limits	(00000008) is pending
• Exceeding / dropping below MAX / MIN	(00002000)
• Float movement too small/too large	(00000001)
• Totalizer overflow	00001000
• Temperature in device too high/too low	00000010 / 00000020 / 00000040
• Sensor signals implausible	00000080 / 00000100 / 00000200 / 00000400 / 00000800
• Internal failures (please note and inform manufacturer)	00004000 / 00008000 / 00010000 00020000 / 00040000 / 00080000 00100000 / 00200000 / 00400000 00800000 / 01000000 / 02000000 04000000 / 08000000 / 10000000 20000000

Alarm is indicated by the red LED if active state is “opened”.

9. Retrofit

It is not intended that the customer shall retrofit the totalizer module. If required, the customer needs to send the complete display unit back to the manufacturer for assembly.

10. Maintenance

The totalizer module is maintenance free. If there is a justified doubt as to the operation of the device, the device must be returned to the manufacturer. The device cannot be repaired by the user.